CLAIMS

What is claimed is:

1. A method for searching for Global Positioning System ("GPS") satellites with a Fast Acquisition System within a multi-channel GPS receiver, where the multi-channel GPS receiver receives a plurality of GPS signals wherein each GPS signal corresponds to a GPS satellite having a GPS satellite identification number (Satellite ID) and each GPS signal has a corresponding received GPS satellite Doppler frequency, and the Fast Acquisition System has an initial visible list of GPS satellites and a GPS satellite constellation list, the method comprising:

determining a weak GPS satellite signal from the received plurality of GPS signals, and

generating the weak list of GPS satellites including the weak GPS satellite.

comparing the weak list of GPS satellites to the GPS constellation list, and

generating the search list of GPS satellites where the search list of GPS satellites includes all the GPS satellites in the GPS satellite constellation list less the GPS satellites in the weak list of GPS satellites.

determining a Doppler frequency for the weak GPS satellite signal, and

searching the received plurality of GPS signals utilizing the Doppler frequency of the weak GPS satellite signal.

determining whether a strong GPS satellite signal exists from the received plurality of GPS signals.

2. The method of claim 1, wherein determining whether the strong GPS satellite signal exists includes

correlating the received plurality of GPS signals with a plurality of locally generated pseudo-random noise ("PRN") codes that correspond to the GPS satellites in the search list of GPS satellites.

determining a position for the GPS receiver,

generating a visible list of GPS satellites from the position and the plurality of received GPS signals,

replacing the search list of GPS satellites with a new search list of GPS satellites.

3. The method of claim 2, wherein generating the new search list of GPS satellites includes

comparing the weak list of GPS satellites to the visible list of GPS satellites, and

generating the new search list of GPS satellites, where the new search list of GPS satellites includes all the GPS satellites in the visible list of GPS satellite less the GPS satellites in the weak list of GPS satellites.

4. The method of claim 4, wherein determining whether a strong GPS satellite signal exists includes

correlating the received plurality of GPS signals with a plurality of locally generated pseudo-random noise ("PRN") codes that correspond to the GPS satellites in the search list of GPS satellites, and

comparing the Doppler frequency of the weak signal with a correlation result from correlating the received plurality of GPS signals with the plurality of locally

generated PRN codes that correspond to the GPS satellites in the search list of GPS satellites.

5. A system within a multi-channel GPS receiver that searches for Global Positioning System (GPS) satellites by receipt of a plurality of GPS signals where each GPS signal corresponds to a GPS satellite having a GPS satellite identification number (satellite ID), comprising:

a controller in control of the multi-channel GPS receiver that assigns each GPS satellite ID that corresponds to each of the plurality of GPS signals received by the multi-channel GPS receiver to an individual channel of the multi-channel GPS receiver; and

a monitoring channel selected by the controller from the multi-channel GPS receiver that monitors the received GPS signal.

6. A system within a multi-channel GPS receiver that is able to receive a plurality of GPS signals wherein each GPS signal corresponds to a GPS satellite that has a GPS satellite identification number (satellite ID) and each GPS signal has a corresponding GPS satellite Doppler frequency, comprising:

a controller that communicates with the multi-channel GPS receiver;

a memory in the system coupled to the controller having an initial visible list of GPS satellites and a GPS satellite constellation list;

a weak list of GPS satellites identified by the controller and stored in the memory by upon a search of the plurality of GPS signals that utilizes a search list of the GPS satellites that was generated from the weak list of GPS satellites.

7. The system of claim 6, further includes a weak GPS satellite signal received at the multi-channel GPS receiver being identified by the controller and added to the weak list of GPS satellites stored in memory.

8. The system of claim 7, further includes a search list of GPS satellites is created in the memory by the controller by removal of the GPS satellites in weak list of GPS satellites from the GPS satellite constellation.

9. The system of claim 8, further includes a Doppler frequency associated with the weak GPS satellite signal is utilized by the controller to search the plurality of GPS signals received by the multi-channel GPS receiver.

10. A method for searching for Global Positioning System ("GPS") satellites with a Fast Acquisition System within a multi-channel GPS receiver, where the multi-channel GPS receiver receives a plurality of GPS signals wherein each GPS signal corresponds to a GPS satellite having a GPS satellite identification number (Satellite ID) and each GPS signal has a corresponding received GPS satellite Doppler frequency, and the Fast Acquisition System has an initial visible list of GPS satellites and a GPS satellite constellation list, the method comprising:

generating a weak list of GPS satellites from the received plurality of GPS signals;

generating a search list of GPS satellites from the weak list of GPS satellites;

searching the received plurality of GPS signals utilizing the search list of GPS satellites; and

determining whether a strong GPS satellite signal exists from the received plurality of GPS signals.

11. The method of claim 10, wherein generating the weak list of GPS satellites includes

determining a weak GPS satellite signal from the received plurality of GPS signals, and

generating the weak list of GPS satellites including the weak GPS satellite.

12. The method of claim 11, wherein generating a search list of GPS satellites includes

comparing the weak list of GPS satellites to the GPS constellation list, and

generating the search list of GPS satellites where the search list of GPS satellites includes all the GPS satellites in the GPS satellite constellation list less the GPS satellites in the weak list of GPS satellites.

13. The method of claim 12, wherein searching includes

determining a Doppler frequency for the weak GPS satellite signal, and

searching the received plurality of GPS signals utilizing the Doppler frequency of the weak GPS satellite signal.

14. The method of claim 13, wherein searching further includes

generating a Doppler list of Doppler frequency values from the determined weak GPS satellite signal Doppler frequency, and

searching the received plurality of GPS signals utilizing the Doppler list.

15. The method of claim 14, wherein the Doppler list includes Doppler frequency values that are equal to the determined weak GPS satellite signal Doppler frequency plus integral multiples of 1,000 Hertz.

16. The method of claim 15, wherein the Doppler list includes Doppler frequency values that are equal to the determined weak GPS satellite signal Doppler frequency plus integral multiples of -1,000 Hertz.

17. The method of claim 15, wherein determining whether the strong GPS satellite signal exists includes correlating the received plurality of GPS signals with a plurality of locally generated pseudo-random noise ("PRN") codes that correspond to the GPS satellites in the search list of GPS satellites.

18. The method of claim 17, further including removing the weak GPS satellite signal from the weak list of GPS satellites if the strong GPS satellite signal exists.

19. The method of claim 18, further including assigning a channel of the multi-channel GPS receiver to the strong GPS satellite signal.

20. The method of claim 19, wherein assigning a channel includes removing the weak signal from the channel.

21. The method of claim 17, further including

determining a position for the GPS receiver,

generating a visible list of GPS satellites from the position and the plurality of received GPS signals.

22. The method of claim 21, further including replacing the search list of GPS satellites with a new search list of GPS satellites.

23. The method of claim 22, wherein generating the new search list of GPS satellites includes

comparing the weak list of GPS satellites to the visible list of GPS satellites, and

generating the new search list of GPS satellites, where the new search list of GPS satellites includes all the GPS satellites in the visible list of GPS satellite less the GPS satellites in the weak list of GPS satellites.

24. The method of claim 23, wherein determining whether a strong GPS satellite signal exists includes

correlating the received plurality of GPS signals with a plurality of locally generated pseudo-random noise ("PRN") codes that correspond to the GPS satellites in the search list of GPS satellites, and

comparing the Doppler frequency of the weak signal with a correlation result from correlating the received plurality of GPS signals with the plurality of locally

generated PRN codes that correspond to the GPS satellites in the search list of GPS satellites.

25. The method of claim 17, wherein determining whether a strong GPS satellite signal exists further includes

correlating the received plurality of GPS signals with the plurality of locally generated PRN codes that correspond to the GPS satellites in the search list of GPS satellites at a finer resolution than the first correlation, and

comparing the Doppler frequency of the weak signal with a correlation result from correlating the received plurality of GPS signals with the plurality of locally generated PRN codes that correspond to the GPS satellites in the search list of GPS satellites at the finer resolution than the first correlation.

26. The method of claim 17, wherein determining whether a strong GPS satellite signal exists further includes determining a degree of correlation between the weak signal and a result of correlating the received plurality of GPS signals with the plurality of locally generated PRN codes that correspond to the GPS satellites in the search list of GPS satellites.

27. The method of claim 26, further including removing the weak satellite from the weak list of GPS satellites if the strong GPS satellite signal exists.

28. The method of claim 27, further including assigning a channel of the multi-channel GPS receiver to the strong GPS satellite signal.

29. The method of claim 28, wherein assigning a channel includes removing the weak signal from the channel.

30. A method for searching for Global Positioning System (GPS) satellites with a multi-channel GPS receiver, wherein the multi-channel GPS receiver receives a plurality of GPS signals where each GPS signal corresponds to a GPS satellite having a GPS satellite identification number ("GPS satellite ID"), the method comprising:

assigning each GPS satellite ID corresponding to each received GPS signal from the received plurality of GPS signals to an individual channel of the multi-channel GPS receiver;

selecting a channel of the multi-channel GPS receiver as a monitoring channel; and

monitoring the received GPS signals with the monitoring channel.

31. The method of claim 30, wherein assigning includes utilizing a visible list to assign each GPS satellite ID to each individual channel.

32. The method of claim 31, wherein selecting includes selecting a first non-assigned channel and assigning the GPS satellite ID from an initial visible list.

33. The method of claim 31, wherein selecting includes selecting the channel assigned to a lowest elevation satellite upon assignment of all channels.

34. The method of claim 30, wherein selecting includes selecting a last channel of the multi-channel GPS receiver when all channels are assigned and the visible list is unavailable.

35. The method of claim 30, further including

determining the position of the multi-channel GPS receiver, and

monitoring a channel assigned to a satellite ID with a low carrier-to-noise (C/No).

36. The method of claim 35, wherein monitoring includes determining a false lock at the channel.

37. The method of claim 30, further including determining whether a GPS satellite ID is assigned to the monitoring channel.

38. The method of claim 37, including selecting a next GPS satellite ID when the GPS satellite ID searched is assigned to a channel when the a satellite ID has not been assigned to the monitoring channel.

39. The method of claim 38, further including searching the remaining satellites in the GPS constellation after all the common satellites are searched.

40. A system within a multi-channel GPS receiver that is able to receive a plurality of GPS signals wherein each GPS signal corresponds to a GPS satellite that has

a GPS satellite identification number (satellite ID) and each GPS signal has a corresponding GPS satellite Doppler frequency, comprising:

a controller, that communicates with the multi-channel GPS receiver and is in control of the multi-channel GPS receiver, that assigns each GPS satellite ID that corresponds to each of the plurality of GPS signals received by the multi-channel GPS receiver to an individual channel of the multi-channel GPS receiver;

a memory in the system coupled to the controller having an initial visible list of GPS satellites and a GPS satellite constellation list;

a weak list of GPS satellites identified by the controller and stored in the memory by upon a search of the plurality of GPS signals that utilizes a search list of the GPS satellites that was generated from the weak list of GPS satellites;

a monitoring channel selected by the controller from the multi-channel GPS receiver that monitors the received GPS signal.

41. The system of claim 40, further includes a weak GPS satellite signal received at the multi-channel GPS receiver being identified by the controller and added to the weak list of GPS satellites stored in memory.

42. The system of claim 41, further includes a search list of GPS satellites is created in the memory by the controller by removal of the GPS satellites in weak list of GPS satellites from the GPS satellite constellation.

43. The system of claim 42, further includes a Doppler frequency associated with the weak GPS satellite signal is utilized by the controller to search the plurality of GPS signals received by the multi-channel GPS receiver.

44. A method for searching for Global Positioning System ("GPS") satellites with a Fast Acquisition System within a multi-channel GPS receiver, where the multi-channel GPS receiver receives a plurality of GPS signals wherein each GPS signal corresponds to a GPS satellite having a GPS satellite identification number (Satellite ID) and each GPS signal has a corresponding received GPS satellite Doppler frequency, and the Fast Acquisition System has an initial visible list of GPS satellites and a GPS satellite constellation list, the method comprising:

assigning each GPS satellite ID corresponding to each received GPS signal from the received plurality of GPS signals to an individual channel of the multi-channel GPS receiver;

selecting a channel of the multi-channel GPS receiver as a monitoring channel;

monitoring the received GPS signals with the monitoring channel;

generating a weak list of GPS satellites from the received plurality of GPS signals;

generating a search list of GPS satellites from the weak list of GPS satellites;

searching the received plurality of GPS signals utilizing the search list of GPS satellites; and

determining whether a strong GPS satellite signal exists from the received plurality of GPS signals.

45. The method of claim 44, wherein generating the weak list of GPS satellites includes

determining a weak GPS satellite signal from the received plurality of GPS signals, and

generating the weak list of GPS satellites including the weak GPS satellite.

46. The method of claim 45, wherein generating a search list of GPS satellites includes

comparing the weak list of GPS satellites to the GPS constellation list, and

generating the search list of GPS satellites where the search list of GPS satellites includes all the GPS satellites in the GPS satellite constellation list less the GPS satellites in the weak list of GPS satellites.

47. The method of claim 46, wherein searching includes

determining a Doppler frequency for the weak GPS satellite signal, and

searching the received plurality of GPS signals utilizing the Doppler frequency of the weak GPS satellite signal.

48. The method of claim 47, wherein searching further includes

generating a Doppler list of Doppler frequency values from the determined weak GPS satellite signal Doppler frequency, and

searching the received plurality of GPS signals utilizing the Doppler list.

49. A Fast Acquisition System within a multi-channel Global Positioning System ("GPS") receiver, where the multi-channel GPS receiver receives a plurality of GPS signals wherein each GPS signal corresponds to a GPS satellite having a GPS satellite identification number (Satellite ID) and each GPS signal has a corresponding

received GPS satellite Doppler frequency, and the Fast Acquisition System has an initial visible list of GPS satellites and a GPS satellite constellation list, the Fast Acquisition System comprising:

means for assigning each GPS satellite ID corresponding to each received GPS signal from the received plurality of GPS signals to an individual channel of the multi-channel GPS receiver;

means for selecting a channel of the multi-channel GPS receiver as a monitoring channel;

means for monitoring the received GPS signals with the monitoring channel;

means for generating a weak list of GPS satellites from the received plurality of GPS signals;

means for generating a search list of GPS satellites from the weak list of GPS satellites;

means for searching the received plurality of GPS signals utilizing the search list of GPS satellites; and

means for determining whether a strong GPS satellite signal exists from the received plurality of GPS signals.

50. The Fast Acquisition System of claim 49, wherein generating the weak list of GPS satellites means includes

means for determining a weak GPS satellite signal from the received plurality of GPS signals, and

means for generating the weak list of GPS satellites including the weak GPS satellite.

51. The Fast Acquisition System of claim 50, wherein generating a search list of GPS satellites means includes

means for comparing the weak list of GPS satellites to the GPS constellation list, and

means for generating the search list of GPS satellites where the search list of GPS satellites includes all the GPS satellites in the GPS satellite constellation list less the GPS satellites in the weak list of GPS satellites.

52. The Fast Acquisition System of claim 51, wherein searching means includes

means for determining a Doppler frequency for the weak GPS satellite signal, and

means for searching the received plurality of GPS signals utilizing the Doppler frequency of the weak GPS satellite signal.

53. The Fast Acquisition System of claim 52, wherein searching means further includes

means for generating a Doppler list of Doppler frequency values from the determined weak GPS satellite signal Doppler frequency, and

means for searching the received plurality of GPS signals utilizing the Doppler list.

54. A signal-bearing medium having software for searching for Global Positioning System ("GPS") satellites with a Fast Acquisition System within a multi-channel Global Positioning System ("GPS") receiver, where the multi-channel GPS receiver receives a plurality of GPS signals wherein each GPS signal corresponds to a GPS satellite having a GPS satellite identification number (Satellite ID) and each GPS signal has a corresponding received GPS satellite Doppler frequency, and the Fast Acquisition System has an initial visible list of GPS satellites and a GPS satellite constellation list, the signal-bearing medium comprising:

logic configured for assigning each GPS satellite ID corresponding to each received GPS signal from the received plurality of GPS signals to an individual channel of the multi-channel GPS receiver;

logic configured for selecting a channel of the multi-channel GPS receiver as a monitoring channel;

logic configured for monitoring the received GPS signals with the monitoring channel;

logic configured for generating a weak list of GPS satellites from the received plurality of GPS signals;

logic configured for generating a search list of GPS satellites from the weak list of GPS satellites;

logic configured for searching the received plurality of GPS signals utilizing the search list of GPS satellites; and

logic configured for determining whether a strong GPS satellite signal exists from the received plurality of GPS signals.

55. The signal-bearing medium of claim 54, wherein logic configured for generating the weak list of GPS satellites includes

logic configured for determining a weak GPS satellite signal from the received plurality of GPS signals, and

logic configured for generating the weak list of GPS satellites including the weak GPS satellite.

56. The signal-bearing medium of claim 55, wherein logic configured for generating a search list of GPS satellites includes

logic configured for comparing the weak list of GPS satellites to the GPS constellation list, and

logic configured for generating the search list of GPS satellites where the search list of GPS satellites includes all the GPS satellites in the GPS satellite constellation list less the GPS satellites in the weak list of GPS satellites.

57. The signal-bearing medium of claim 56, wherein logic configured for searching includes

logic configured for determining a Doppler frequency for the weak GPS satellite signal, and

logic configured for searching the received plurality of GPS signals utilizing the Doppler frequency of the weak GPS satellite signal.

58. The signal-bearing medium of claim 57, wherein logic configured for searching further includes

logic configured for generating a Doppler list of Doppler frequency values from the determined weak GPS satellite signal Doppler frequency, and

logic configured for searching the received plurality of GPS signals utilizing the Doppler list.

59. A Fast Acquisition System within a multi-channel GPS receiver, where the multi-channel GPS receiver receives a plurality of GPS signals wherein each GPS signal corresponds to a GPS satellite having a GPS satellite identification number (Satellite ID) and each GPS signal has a corresponding received GPS satellite Doppler frequency, and the Fast Acquisition System has an initial visible list of GPS satellites and a GPS satellite constellation list, the Fast Acquisition System comprising:

means for determining a weak GPS satellite signal from the received plurality of GPS signals, and

means for generating the weak list of GPS satellites including the weak GPS satellite.

means for comparing the weak list of GPS satellites to the GPS constellation list, and

means for generating the search list of GPS satellites where the search list of GPS satellites includes all the GPS satellites in the GPS satellite constellation list less the GPS satellites in the weak list of GPS satellites.

means for determining a Doppler frequency for the weak GPS satellite signal, and

searching the received plurality of GPS signals utilizing the Doppler frequency of the weak GPS satellite signal.

means for determining whether a strong GPS satellite signal exists from the received plurality of GPS signals.

60. The Fast Acquisition System claim 59, wherein generating the weak list of GPS satellites means includes

means for determining a weak GPS satellite signal from the received plurality of GPS signals, and

means for generating the weak list of GPS satellites including the weak GPS satellite.

61. The Fast Acquisition System of claim 60, wherein generating a search list of GPS satellites means includes

means for comparing the weak list of GPS satellites to the GPS constellation list, and

means for generating the search list of GPS satellites where the search list of GPS satellites includes all the GPS satellites in the GPS satellite constellation list less the GPS satellites in the weak list of GPS satellites.

62. The Fast Acquisition System of claim 61, wherein the searching means includes

means for determining a Doppler frequency for the weak GPS satellite signal, and

means for searching the received plurality of GPS signals utilizing the Doppler frequency of the weak GPS satellite signal.

63. The Fast Acquisition System of claim 62, wherein the searching means further includes

means for generating a Doppler list of Doppler frequency values from the determined weak GPS satellite signal Doppler frequency, and

means for searching the received plurality of GPS signals utilizing the Doppler list.

64. The Fast Acquisition System of claim 63, wherein the Doppler list includes Doppler frequency values that are equal to the determined weak GPS satellite signal Doppler frequency plus integral multiples of 1,000 Hertz.

65. The Fast Acquisition System of claim 64, wherein the Doppler list includes Doppler frequency values that are equal to the determined weak GPS satellite signal Doppler frequency plus integral multiples of -1,000 Hertz.

66. The Fast Acquisition System of claim 64, wherein means for determining whether the strong GPS satellite signal exists includes means for correlating the received plurality of GPS signals with a plurality of locally generated pseudo-random noise ("PRN") codes that correspond to the GPS satellites in the search list of GPS satellites.

67. The Fast Acquisition System of claim 66, further including means for removing the weak GPS satellite signal from the weak list of GPS satellites if the strong GPS satellite signal exists.

68. The Fast Acquisition System of claim 67, further including means for assigning a channel of the multi-channel GPS receiver to the strong GPS satellite signal.

69. The Fast Acquisition System of claim 68, wherein means for assigning a channel includes means for removing the weak signal from the channel.

70. The Fast Acquisition System of claim 66, further including

means for determining a position for the GPS receiver,

means for generating a visible list of GPS satellites from the position and the plurality of received GPS signals.

71. The Fast Acquisition System of claim 70, further including means for replacing the search list of GPS satellites with a new search list of GPS satellites.

72. The Fast Acquisition System of claim 72, wherein mean for generating the new search list of GPS satellites includes

means for comparing the weak list of GPS satellites to the visible list of GPS satellites, and

means for generating the new search list of GPS satellites, where the new search list of GPS satellites includes all the GPS satellites in the visible list of GPS satellite less the GPS satellites in the weak list of GPS satellites.

73. The Fast Acquisition System of claim 72, wherein means for determining whether a strong GPS satellite signal exists includes

means for correlating the received plurality of GPS signals with a plurality of locally generated pseudo-random noise ("PRN") codes that correspond to the GPS satellites in the search list of GPS satellites, and

means for comparing the Doppler frequency of the weak signal with a correlation result from correlating the received plurality of GPS signals with the plurality of locally generated PRN codes that correspond to the GPS satellites in the search list of GPS satellites.

74. The Fast Acquisition System of claim 66, wherein means for determining whether a strong GPS satellite signal exists further includes

means for correlating the received plurality of GPS signals with the plurality of locally generated PRN codes that correspond to the GPS satellites in the search list of GPS satellites at a finer resolution than the first correlation, and

means for comparing the Doppler frequency of the weak signal with a correlation result from correlating the received plurality of GPS signals with the plurality of locally generated PRN codes that correspond to the GPS satellites in the search list of GPS satellites at the finer resolution than the first correlation.

75. The Fast Acquisition System of claim 66, wherein means for determining whether a strong GPS satellite signal exists further includes means for determining a degree of correlation between the weak signal and a result of correlating the received plurality of GPS signals with the plurality of locally generated PRN codes that correspond to the GPS satellites in the search list of GPS satellites.

76. The Fast Acquisition System of claim 75, further including means for removing the weak satellite from the weak list of GPS satellites if the strong GPS satellite signal exists.

77. The Fast Acquisition System of claim 76, further including means for assigning a channel of the multi-channel GPS receiver to the strong GPS satellite signal.

78. The Fast Acquisition System of claim 77, wherein means for assigning a channel includes means for removing the weak signal from the channel.

79. A Fast Acquisition System for searching for Global Positioning System (GPS) satellites with a multi-channel GPS receiver, wherein the multi-channel GPS receiver receives a plurality of GPS signals where each GPS signal corresponds to a GPS satellite having a GPS satellite identification number ("GPS satellite ID"), the Fast Acquisition System comprising:

means for assigning each GPS satellite ID corresponding to each received GPS signal from the received plurality of GPS signals to an individual channel of the multi-channel GPS receiver;

means for selecting a channel of the multi-channel GPS receiver as a monitoring channel; and

means for monitoring the received GPS signals with the monitoring channel.

80. The Fast Acquisition System of claim 79, wherein means for assigning includes utilizing a visible list to assign each GPS satellite ID to each individual channel.

81. The Fast Acquisition System of claim 80, wherein means for selecting includes means for selecting a first non-assigned channel and assigning the GPS satellite ID from an initial visible list.

82. The *Fast Acquisition System* of claim 80, wherein means for selecting includes means for selecting the channel assigned to a lowest elevation satellite upon assignment of all channels.

83. The *Fast Acquisition System* of claim 79, wherein *means for* selecting includes *means for* selecting a last channel of the multi-channel GPS receiver when all channels are assigned and the visible list is unavailable.

84. The Fast Acquisition System of claim 80, further including

means for determining the position of the multi-channel GPS receiver, and

means for monitoring a channel assigned to a satellite ID with a low carrier-to-noise density (C/No).

85. The Fast Acquisition System of claim 84, wherein means for monitoring includes means for determining a false lock at the channel.

86. The Fast Acquisition System of claim 79, further including means for determining whether a GPS satellite ID is assigned to the monitoring channel.

87. The Fast Acquisition System of claim 86, including means for selecting a next GPS satellite ID when the GPS satellite ID searched is assigned to a channel when the a satellite ID has not been assigned to the monitoring channel.

88. The Fast Acquisition System of claim 87, further including means for searching the remaining satellites in the GPS constellation after all the common satellites are searched.